Preparing students for college: the implementation and impact of the Early College High School model

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Abstract:

As implemented in North Carolina, Early College High Schools are small, autonomous schools designed to increase the number of students who graduate from high school and are prepared for postsecondary education. Targeted at students who are underrepresented in college, these schools are most frequently located on college campuses and are intended to provide students with 2 years of college credit upon graduation from high school. This article reports on preliminary 9th-grade results from 285 students in 2 sites participating in a longitudinal experimental study of the impact of the model. These early results show that significantly more Early College High School students are enrolling and progressing in a college preparatory course of study. This expanded access, however, is associated with somewhat lower pass rates for some courses, suggesting the need for strong academic support to accompany increased enrollment in more rigorous courses. Implementation data collected on one school indicate that it is successfully implementing the model's components.

Keywords: North Carolina | Early College | experimental study | early college model

Article:

INTRODUCTION

Similar to many states, North Carolina is facing a crisis in public education. “Of every 100 students who enter ninth grade in a public high school in North Carolina, only 70 graduate within five years. Only 42 of them enroll in college, and only 19 of them complete a two-year or four-year degree within six years of graduating from high school” (Public Schools of North Carolina,

2008, p. 20). Policymakers, practitioners, and business leaders have concluded that this exodus is unacceptable and have responded with an extensive public–private effort to redesign high schools in North Carolina to make them more effective for all students.

This effort centers on the creation of small, autonomous schools purposefully designed to provide rigorous and relevant instruction to all students. Some of these schools result from the breakup of larger, comprehensive high schools. The largest numbers of these schools, however, are new schools that are part of the Early College High Schools (ECHS) Initiative. Located on the campuses of 2- and 4-year colleges and universities, early college high schools aim to provide a rigorous course of study with the goal of ensuring that all students graduate with a high school diploma and up to 2 years of university transfer credit or an associate's degree. ECHS are intended for students who typically are underrepresented in college—students whose parents never attended college themselves, students from low-income families, minorities, and those who have had limited success in conventional schools.

The impact of this ambitious initiative is being examined by a large-scale, longitudinal experimental study funded by the Institute of Education Sciences, the Study of the Efficacy of North Carolina's Early College High School Model. This article focuses on early results from two schools that used a random assignment process prior to the official start of the study: Middleton Early College and Downing Early College. [1] The study examines the program's implementation and impact.

In this article, we report on two specific questions:

1. What is the impact of the ECHS model on students' course-taking?
2. To what extent do ECHS implement the required components of the model?

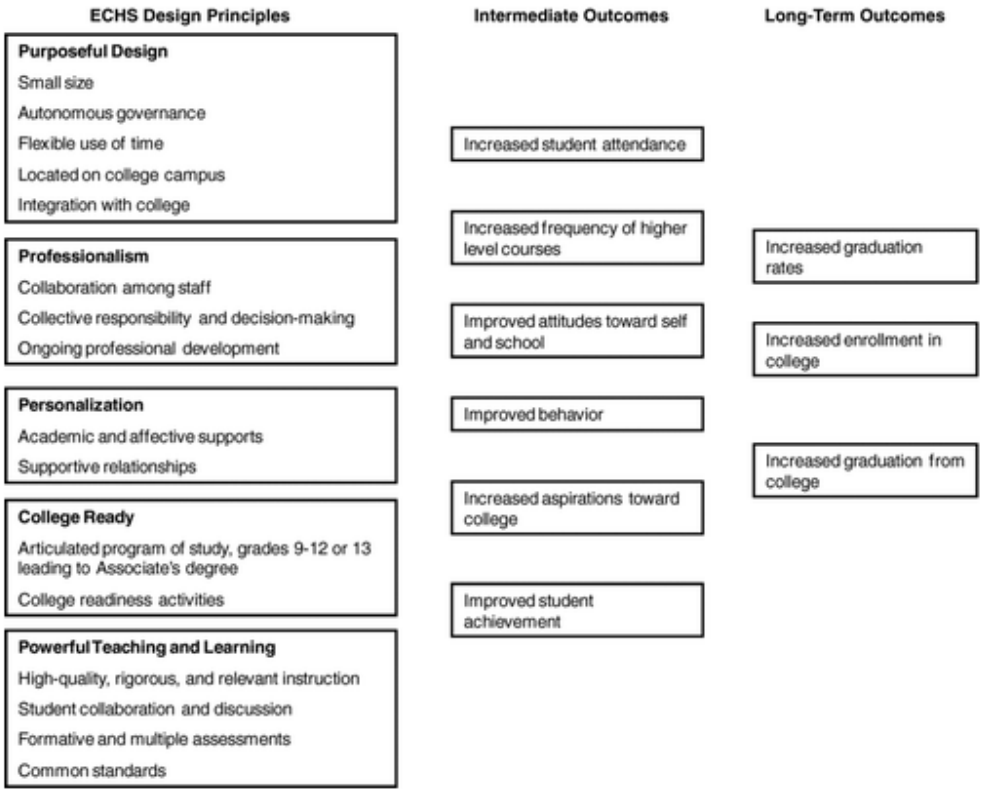
We begin with an explanation of the early college high school model, placing this model in the context of the literature on smaller learning communities. We continue with an overview of the research study: its questions, methodology and data sources. The next two sections describe initial results for program impact and program implementation. We conclude with initial lessons learned from the study and potential implications for the smaller learning communities (SLC) movement.

THEORETICAL BACKGROUND AND PRIOR RESEARCH

Starting in 2002, the Bill & Melinda Gates Foundation, partnering with other funding agencies, created the ECHS Initiative, which is intended to lead to the widespread adoption of the ECHS model across the nation. As envisioned by the national ECHS Initiative, early colleges should increase the number of high school graduates ready for college because "encountering the rigor, depth, and intensity of college work at an earlier age inspires average, underachieving, and well-prepared high school students. In addition, ECHSs help reduce financial and admissions barriers faced by many low-income students" (Jobs for the Future, 2005, p. 3). North Carolina has the largest concentration of ECHS in the country, with more than 60 ECHS across the state. The state's model is consistent with the national effort but does include some slight variation. Next we briefly explain North Carolina's ECHS model and its relationship to the SLC literature.

Similar to SLC, North Carolina's ECHS Initiative builds on an extensive body of literature showing that smaller school size is associated with a host of positive student outcomes (Cotton, 1996, 2001; Page, Layzer, Schimmenti, Bernstein, & Horst, 2002;Wasley et al., 2000), particularly for low-income or minority students (Howley, 1995; Lee & Smith, 1997). Smallness for the ECHS is envisioned as an aspect of school structure that facilitates the creation of a personalized learning environment and a collaborative environment for teachers. These factors then enable teachers to engage in more rigorous and relevant instruction and to support students as they receive a college-preparatory curriculum. ECHS are thus purposefully established to incorporate five core design principles: purposeful design, professionalism, personalization, college readiness, and powerful teaching and learning. Figure 1 presents a graphic representation of these core components as well as the expected intermediate and long-term outcomes of North Carolina's model. These five principles complement and support each other. According to the theory behind the creation of the ECHS, these five principles must be implemented simultaneously. In other words, implementing one by itself will not have the desired effects.

FIGURE 1 Conceptual framework of North Carolina's Early College High School model.



Studies of student performance at ECHS indicate that students perform well, generally with higher academic performance than other schools in the district (American Institutes of Research & SRI International, 2008). However, most studies did not have access to students' historical achievement data, leaving it unclear whether ECHS's better results were due to the model or because higher level students self-select into the ECHS. The experimental design used in our study allows us to control for selection bias.

METHODOLOGY

Sample

Schools participating in the study used random assignment to select students from an eligible pool of eighth-grade students who applied for admission. Each student was assigned a randomly generated number; the list of students was then ordered from lowest to highest, creating a randomly ordered list with an embedded waitlist. Early colleges offered students spots in consecutive order.

If needed, schools were allowed to exclude students from the random assignment. For example, one school from the sample for this article automatically admitted children of staff members. Students who enrolled in the school through a nonrandom process were excluded from all outcome analysis although they may have been included in the implementation data.
The study follows an intent-to-treat design. As such, any students who were offered positions in the ECHS, even if they later did not attend or dropped out of the ECHS (no-shows), were included in the treatment group. Similarly, students who attended ECHSs despite being assigned to the control group were retained in that group (cross-overs).

The sample for this article comes from two schools that used random processes prior to the formal start of the study. Both Middleton and Downing ECHS drew names out of a hat to admit students. For Middleton, which started 1 year before Downing, we have results for two cohorts of ninth graders. Downing's results are limited to one cohort of ninth graders. The total sample for the analysis included 285 ninth graders (132 treatment and 159 control) in both schools (with two cohorts for Middleton). Table 1 shows the sample for each school by year. Table 2 reports demographic characteristics and eighth-grade achievement for the treatment and control groups. There were no statistically significant differences between the characteristics of students in the treatment and control groups in the two schools.

TABLE 1
Sample Size, by School, Year, Grade, and Study Status

	Middleton				Downing	
	2005–2006 Cohort		2006–2007 Cohort		2006–2007 Cohort	
	Treatment	Control	Treatment	Control	Treatment	Control
9th grade	41	37	39	31	52	91

Measuring Outcomes

To track progress toward the anticipated long-term outcomes of ECHS, we have identified intermediate measures (Figure 1) associated with continued enrollment in high school and/or success in college. Data on most of these measures are collected annually by the North Carolina Department of Public Instruction. The North Carolina Education Research Data Center creates student-level longitudinal data files and encrypts the data to preserve confidentiality. North Carolina Education Research Data Center has developed a database specific for this study that is linked to the North

TABLE 2
Treatment and Control Group Characteristics, Three Cohorts in Two Schools

	Treatment Group[a] *M* or Proportion	Control Group[b] *M* or Proportion
Race and ethnicity		
American Indian	0.76%	0.00%
Asian	0.76%	1.26%
Black	21.97%	18.87%
Hispanic	3.03%	6.29%
Multiracial	2.27%	1.89%
White	71.21%	71.70%
Gender		
Male	45.45%	43.40%
Age	15.38	15.49
Exceptionality		
Disabled/Impaired	5.34%	4.90%
Gifted	9.85%	11.54%
First-generation college	56.15%	51.90%
Free/Reduced price lunch	45.45%	44.65%
8th-grade achievement		
Math–average score	333.02	340.45
Math–% passing exam	78.91%	74.00%
Reading–average score	266.27	265.71
Reading–% passing exam	98.45%	95.24%
8th-grade Algebra 1–% taking	16.92%	18.35%
8th-grade Algebra 1–average score	73.73	75.24
8th-grade Algebra 1–% passing exam	100.00%	100.00%

[a]$N = 132$. [b]$N = 159$.

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student-level longitudinal data files and encrypts the data to preserve confidentiality. North Carolina Education Research Data Center has developed a database specific for this study that is linked to the North Carolina Department of Public Instruction database and that includes longitudinal data on each treatment and control student.

Outcomes for the full study will be analyzed using multivariate regressions to control for the student characteristics and the student-level random assignment process within sites. Because this article includes outcome data only for two schools, results reported here are from *t* tests to compare differences in outcomes.

In this article, we focus on course taking or enrollment and success in college preparatory courses as one of the most sensitive indicators of the impact of the model and one that might be appropriate to examine even early in a model's implementation. At the time of this study, North Carolina offered three courses of study leading to a high school diploma [2] : a Career Preparatory Course of Study, a College-Tech Preparatory Course of Study, and the College Preparatory Course of Study. The course requirements in the College Preparatory track were aligned with the entrance requirements for the University of North Carolina system. As part of the ECHS model, the ECHS are required to offer a default college preparatory curriculum to all students. The percentage of students progressing in a college preparatory course of study thus forms one key indicator of the model's success.

Given that North Carolina did not have transcript data for the years of our study, scores on state-mandated End-of-Course (EOC) tests were used as proxies for course enrollment and success. EOC tests were required for most college-preparatory courses, even if the courses themselves were not required for graduation. For example, a student did not have to take Algebra II to graduate, [3] but a student taking the course had to take the exam.

As scores on these tests were included in a school's accountability measures, it is possible that schools may have steered students perceived as less capable away from optional higher level courses, a practice noted in anecdotal conversations with high school principals. This provides additional rationale for the use of measures of course taking as appropriate indicators of success. Table 3 shows courses typically appearing on a college preparatory course of study, the typical grade in which the course was taken, whether the course was required for graduation of everyone regardless of their track, and whether there was a mandated EOC associated with the course. The shaded subjects—Geometry, Algebra II, Chemistry, and Physics—represent those courses not mandated for graduation but with required tests. We have hypothesized that participation rates in these courses will differ between the ECHS and the traditional high schools.

TABLE 3
Typical Course-Taking Pattern for College Preparatory Course of Study

Subject	Grade(s) at Which Subject Is Typically Taken	Graduation Requirement[a]	Mandated EOC
English I-IV	9–12	Yes	English I[b] only
Algebra I	9	Yes	Yes[b]
Geometry	10	No	Yes
Algebra II	11	No	Yes
Pre-Calculus, Calculus, Advanced Functions and Modeling	12	No	No
Earth/Environmental Science	9	Yes	No
Biology	10	Yes	Yes[b]
Chemistry	11	No	Yes[c]
Physics	12	No	Yes[c]
World History	9	Yes	No
Civics and Economics	10	Yes	Yes[b]
U.S. History	11	Yes	Yes[b]
Foreign Language (2 years)	No typical pattern	No	No

Note. EOC = .

[a]The courses on this table are required for students in the college preparatory track of study. Some of these courses are also required for graduation, regardless of a student's track. Courses required for all students are indicated by a yes in this column. [b]Students must pass these EOCs in order to graduate. [c]Starting in the 2009–2010 school year, chemistry and physics EOCs were no longer offered.

Our research was investigating not just course taking but also course progression as an outcome. Because we used EOC tests as a proxy for course taking, we also used a passing score on the EOC as a proxy for passing the course. This may not represent an exact course pass rate given that there may be students who passed the test but did not pass the course or students who did not pass the test but did pass the course. On the other hand, the advantage of using the EOC as an indicator of passing the test is that it is a standardized statewide assessment and is administered and scored consistently across all schools in the treatment and control group. This provided an external check on the content students have learned in the course.

In this study, we looked at the percentage of students who passed the test based on two samples of students. The first sample was the entire population of students in the two schools reported on in this article. This allowed us to look at how successful the program was at increasing access to college preparatory courses among these students. The second sample was restricted to the students who took the test. This gave us a pass rate similar to the rate traditionally reported.

Measuring Implementation

To put these academic outcomes in context, we used four approaches to collect implementation data: (a) Student Implementation Survey, (b) Staff Implementation Survey, (c) site visits, and (d) school annual self-assessments.

Figure 1 identifies the Design Principles or core components of North Carolina's ECHS model. For each Design Principle, the research team looked at program descriptions, met with program staff, and reviewed the literature to develop a set of indicators. The indicators were then used to

develop questions for both a student survey and a staff survey designed to be completed by all the students and staff who have given consent, and to develop questions for interviewing staff and students during the site visits.

The student survey included both questions about the student's school experience (instructional activities, support activities, college awareness activities, and expectations for students) as well as questions about short-term outcomes such as student–teacher relationships and measures of student engagement. This survey was assessed for test–retest reliability; 12 of the 13 scales had acceptable levels of reliability with Cronbach's alpha greater than .70 (Nunnally, 1978). One subscale, the Challenge subscale, had a Cronbach's alpha of .677 in the pilot testing and was interpreted with caution.

The staff survey asked about implementation of the design principles' indicators. The survey was piloted with 11 staff in two schools not participating in the study. The staff identified issues with the wording or with understanding of the intent of the questions. The survey was then modified to incorporate their feedback.

Each participating school received a site visit once during their 4-year participation in the study. Each site visit included a tour of the school; observations in two classes; and interviews with the principal, the college liaison, two staff members, two college faculty members, and a focus group of students. We developed questions for the interview protocols based on the design principles.

Implementation findings are provided only for Middleton given that it was the only school with a complete set of data including both surveys and site visits at the time this article was written.

RESULTS

The two research questions addressed in the study concern the impact of the ECHS model on students' course taking and the extent to which the ECHS implement the core model components. We present results for each of these in turn.

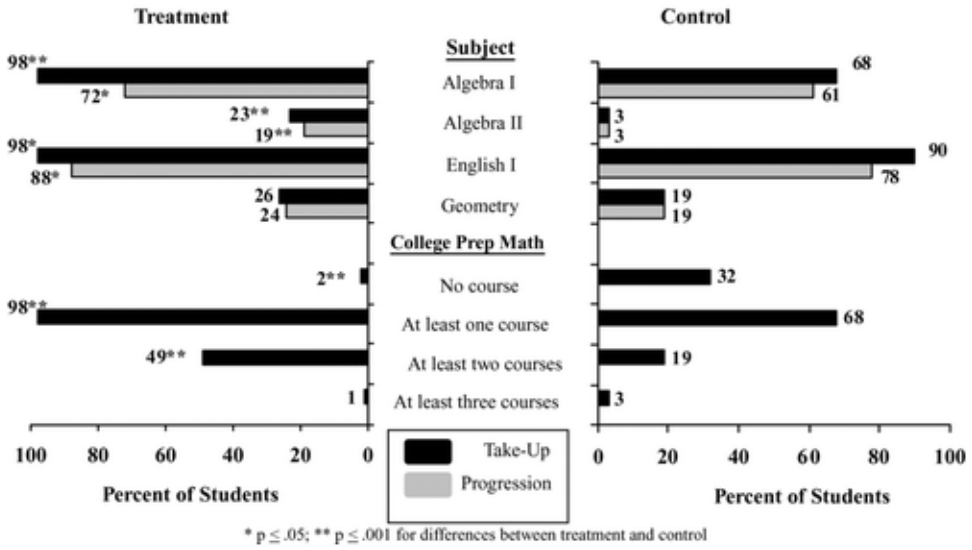
Impact on Course Taking and Achievement at Middleton and Downing ECHS

An analysis of course-taking patterns showed that a larger percentage of ECHS students were progressing more rapidly through a college preparatory track of study, compared to control-group students. Here we report both results for taking the courses and for passing the exams. Only students who took the courses were eligible to take and pass the examinations. The first set of analyses examined course-taking and course progression for both grades; the second set of analyses examined academic performance on the different tests.

Figure 2 shows the ninth-grade course-taking and course progression rates for treatment and control students for a core set of courses for which data are available. The denominator in this graphic for the treatment group is the entire sample of treatment students and the denominator for the control group is the entire sample of control students. The percentages thus represent the proportion of the entire group that had taken a specific course (take-up rates) and then progressed in that course (course progression rates). The bars at the top of the figure show the percentages of

students taking and passing specific End of Course exams. For example, the bars on the left side show that 98% of the entire treatment group had taken Algebra I by the end of ninth grade compared to the bars on the right side, which show that 68% of the control group had taken Algebra I. The bars in the bottom half of the figure show the percentage of students who have taken any college preparatory math classes in the treatment and control group. For example, 2% of the treatment group had not taken any college prep math courses by the end of ninth grade, compared to 32% of the control group, a statistically significant difference.

FIGURE 2 Ninth-grade course take-up and course progression rates (*n* = 285).



These results showed that the ECHS were providing a more accelerated course load to a wider range of students than the traditional high school. This expanded access, however, appeared to come at a cost in some situations. When comparing pass rates (percentage of students who took the test and passed it) for the two groups, the pass rates for some courses were higher in the control group. For example, 23% of the treatment group took Algebra II in ninth grade compared to 3% of the control group. The pass rate was 83% in the treatment group, compared to 100% in the control group. This is not unexpected as the sample of students taking the course was very different between the treatment and control groups; this contrast therefore falls outside of the experimental design. The 3% of students in the control group taking Algebra II in ninth grade represented only the most advanced students, whereas the 23% in the treatment group actually represented almost all of the ninth-grade students in one school. A similar situation existed with all of the math courses; the percentage of students taking these courses in the ECHS was much larger and therefore represented a set of students with a much wider range of abilities. In the English course, however, the higher percentage of students taking the course in the ECHS group did not affect the pass rate, which was actually slightly higher (although not statistically significantly so) in the treatment group. Table 4 shows take-up rates (or the percentage of the entire sample taking the EOC) and pass rates (or the percentage of students who took the test and passed) for the same set of subjects.

TABLE 4
Ninth-Grade Take-Up and Pass Rates for College Track Courses

	Treatment Group[a]: M	Control Group[b]: M	T-C Difference	
			Difference	p
Algebra I				
Take-up	97.7%	68.0%	29.7%	<.001
Pass (takers)	73.8%	89.6%	−15.8%	.002
Geometry				
Take-up	26.4%	18.6%	7.8%	.117
Pass (takers)	91.2%	100.0%	−8.8%	.104
Algebra II				
Take-up	23.3%	3.2%	20.1%	.000
Pass (takers)	83.3%	100.0%	−16.7%	.339
English I				
Take-up	97.7%	89.7%	7.9%	.007
Pass (takers)	89.7%	86.4%	3.3%	.417

Note. T-C = Treatment-Control.
[a]$N = 129$. [b]$N = 156$.

Results in Table 4 should be interpreted with caution because a higher proportion of ECHS students are taking more advanced courses. As a result, the characteristics of these students likely differed from control group students taking these courses. Thus, the differences observed in the pass rates of the two groups likely did not provide an accurate answer to the question of whether enrolling in an ECHS leads to higher scores on end-of-course tests. To address this issue, we have developed a propensity score matching based method to identify two comparable groups of students: (a) ECHS students who would have taken such courses even in the absence of ECHS and (b) their control group counterparts (Bernstein & Unlu, 2008). The data requirements of this approach are extensive, and we will utilize it when the data from the full sample of schools are available.

ECHS Implementation at Middleton Early College High School

To provide some context for our findings on school impact, we report on how one ECHS was implementing the model.

Middleton Early College High School was in the first set of ECHS created in North Carolina. Located in a rural area, the school was on the campus of a community college. The school has experienced some turnover since its establishment, with a switch in principals and many changes in staff. A total of 52 students and 9 staff at Middleton completed ECHS Implementation Surveys online in the spring of 2008. The school also received a 2-day site visit in the spring of 2008. Findings are organized by the five design principles presented in Figure 1.

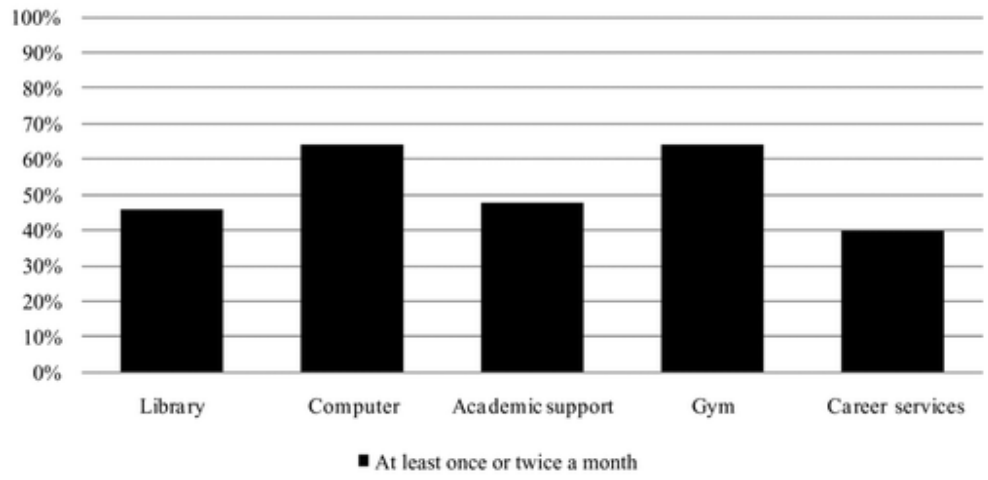
Principle 1: Purposeful Design

Purposeful design encompasses the specific structures that are in place to support the other four design principles. As just described, this includes a small number of students, the use of the schedule to provide time for support activities and collaboration, and the extent to which students and faculty in the school are integrated into the college experience.

ECHS participating in North Carolina's ECHS Initiative are required to serve no more than 400 students. Middleton's enrollment of approximately 111 students in Grades 9 to 11 (with an estimated 160 when the school serves Grades 9 to 12) was on the smaller end.
Because all ECHSs are required to develop a schedule that works with college courses, they do not use a traditional schedule and have flexibility to schedule blocks of time for student support activities and for collaboration. The majority of Middleton's staff reported that there were regularly scheduled times for joint planning (seven of nine) and for professional development (six of nine).

Part of creating college-going expectations for students is having the students participate in activities similar to college students. Middleton students reported using college facilities and resources with more frequent use of facilities such as the library, the computer lab, and the gymnasium and less frequent use of the college academic support services and career services. Figure 3 reports the percentage of students indicating they used different college facilities at least once or twice per month.

FIGURE 3 Students' use of college facilities.



Principle 2: Professionalism

The small size of the school is designed to make it easier for teachers to operate in an atmosphere of professionalism, including collaborating with each other, collective decision making, and receiving professional development. Results from the implementation data indicated that the school was incorporating many aspects of a professional working environment.

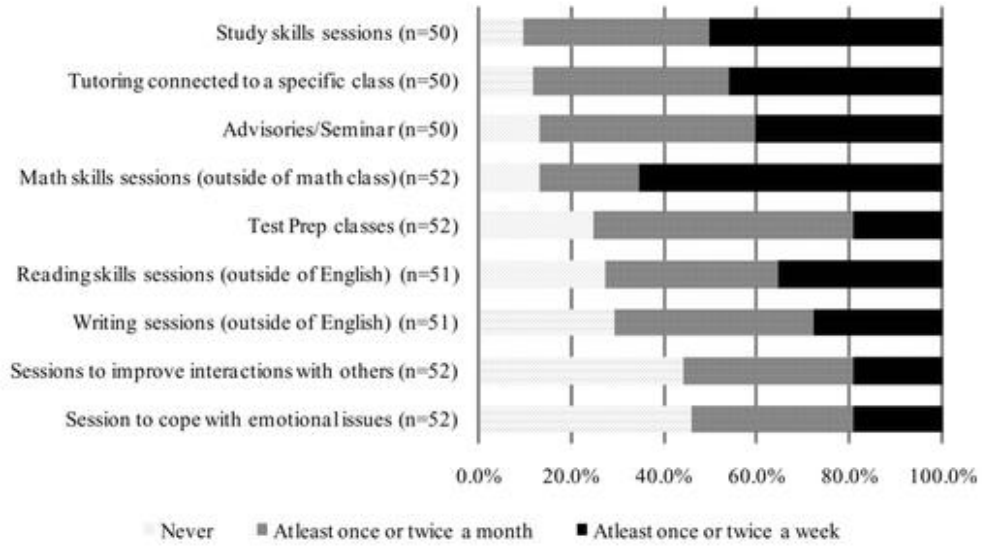
Responses to the staff survey showed that teachers collaborated on a regular basis on a variety of topics. One hundred percent of the staff (nine of nine respondents) indicated they collaborated with each other at least weekly on student behavior, whereas two thirds or more of the staff reported collaborating at least weekly on lesson planning, logistics, and assessments. All of the staff reported participating in multiple sessions of professional development over the past year. Eight of nine staff members reported receiving multiple sessions of professional development in

the content they teach, in instructional practices associated with the content they teach, in general instructional practices, and in general organizational and management practices. All of the staff reported that teachers were involved in decision making, with seven of nine indicating that they were involved in at least some major decisions and four of nine indicating teachers were involved in all major decisions.

Principle 3: Personalization

A more personalized environment is perceived as a key benefit for SLC and small schools. For this study, personalization is conceptualized as both the implementation of specific academic and affective support activities as well as the creation of supportive teacher–student relationships. Students reported participating in academic support activities far more frequently than in affective support activities. The most commonly implemented academic support was through an advisory/seminar with almost all students reporting some level of participation. Figure 4 shows levels of participation in different academic and affective support activities.

FIGURE 4 Participation in academic and affective support activities.



Students overall reported supportive teacher–student relationships, with an average score of 3.3 out of 4 on the relationships scale where 1 indicated *strongly disagree* and 4 indicated *strongly agree* on questions about the extent to which their teachers cared for, respected, and appreciated them. In interviews, both students and staff commented on the relationships that were established as a result of the small setting and the support structures in place. The principal commented in her interview:

> I think that is what makes us special, because our faculty members are so compassionate, and they build everything around their relationships with the students. If they need to stay late, they stay late. If they need to come early, they come early. If they need to take a student home. If they need to pick them up to

> get them to the dance. I mean, our faculty members care so much about our students that they will go the distance just to help them.

One student commented, “For some reason all the teachers seem like counselors.” Another said, “All my teachers are very supportive; they talk about everything.” One student commented on how the teachers help them learn: “You can come in here early or late or teachers will either make their schedule so they can find time to help you.”

Principle 4: College Ready

The ECHS are designed to prepare every student for college. Findings from the surveys and site visits indicate that Middleton was creating a college-going culture through a variety of approaches, including setting expectations for their students to go to college, exposing their students to a college preparatory course of study, and providing college awareness activities.

According to the staff survey, 75 to 99% of students in the ECHS were on a college preparatory course of study. The remaining students were on a college tech-preparatory course of study. Survey responses indicated a strong expectation for going to college, with 87% of students agreeing or strongly agreeing that the staff expect all students to go to college. Seven of nine staff (77%) agreed or strongly agreed that the staff expect all students to go to college.

Middleton also mandated a series of college awareness activities for students, including advising students on courses to take to get ready for college, advising on the skills students need in college, discussions with college faculty about expectations in college, and tours of the college campus. Although we received reports only from 9th and 10th graders, 85% of students reported having discussed college plans with their counselor at least a little bit, whereas 82% reported having discussed college plans with their high school instructors at least a little bit.

Sixty-nine percent of students either agreed or strongly agreed that they knew the courses they had to take to get ready for college. Seventy-eight percent of students agreed or strongly agreed that school was helpful in preparing them for what they wanted to do after high school.

Principle 5: Powerful Teaching and Learning

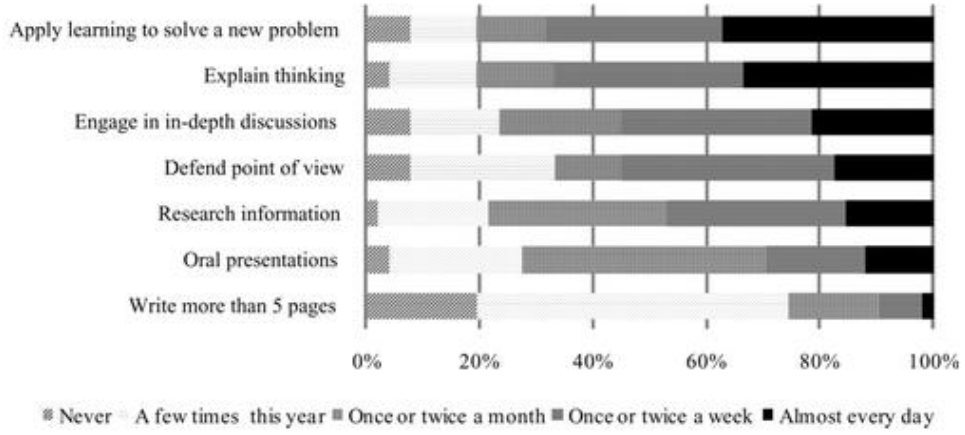
Although enrolling students in higher level classes and expecting them to go to college can move many students forward, North Carolina's model recognizes that teaching and learning must match that expectation. This design principle includes specific practices associated with high-quality, rigorous, and relevant instruction and desired assessment practices.

Students were asked to identify how frequently they participated in rigorous instructional activities. To develop indicators for rigorous instructional practices, we built on Newmann's conceptualization of “Authentic Intellectual Work” (Newmann, Bryk, & Nagaoka, 2001; Newmann, Lopez, & Bryk, 1998). The indicators centered on the incorporation of higher order thinking strategies, the application of knowledge, and the opportunity for extended communication around content. According to the survey, the most commonly implemented

practices were students being asked to apply what they have learned to solve something new and being asked to explain their thinking.

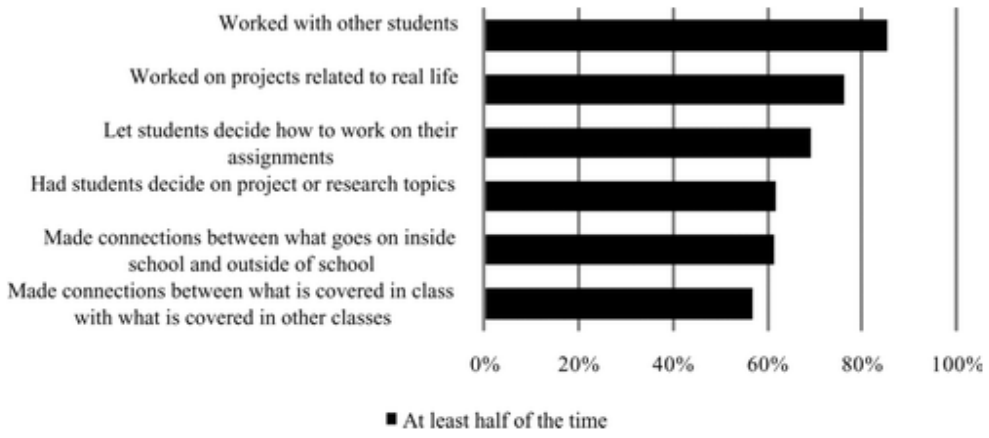
The least commonly reported practices were asking students to write more than five pages or to engage in oral presentations. These were time-consuming activities that would likely occur less frequently during a school year. Figure 5 shows the percentage of students reporting different levels of participation in rigorous instructional practices.

FIGURE 5 Level of participation in rigorous instructional activities (*n* = 51).



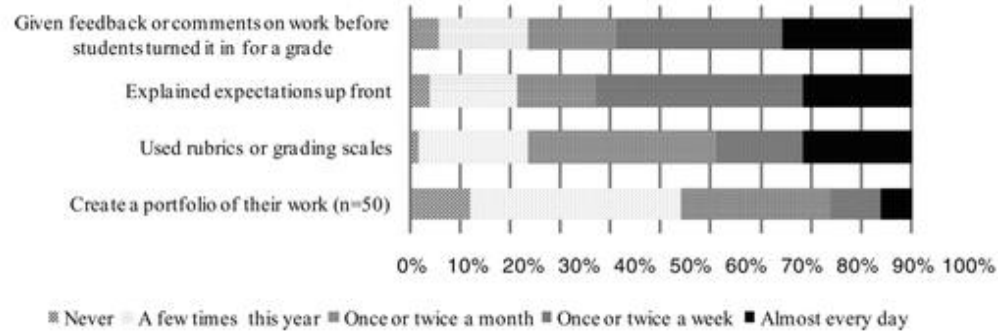
Relevant instructional practices were conceptualized as practices that allowed students to make connections to other classes and to the world beyond school and were also conceptualized as activities, such as working with each other, that mirror the way many people do their work. More than half of students indicated that they participated, at least half of the time, in some if not all of the relevant instructional practices listed on the survey. The most frequent practice was having students work with each other. For example, during the interview, the math teacher said, “I do cooperative learning all the time. … I have to do some instructing because this was an introductory lesson. … But, typically, they’re working in their groups.” Students also indicated that they frequently did projects related to “real life.” Figure 6 shows the percentage of students reporting participation in specific practices at least half of the time.

FIGURE 6 Level of participation in relevant instructional practices (*n* = 52).



Students were also asked to identify the frequency with which they participated in specific assessment-related activities. More than half the students reported receiving feedback or comments on work at least once a week before they turned it in for a grade. As one of the teachers indicated in the interview, "I think that the way I try to teach is that I demand constant feedback. As I'm teaching, I'm constantly asking, 'What did you get?' You constantly ask questions." A similar proportion of students reported the teachers frequently explaining expectations up front. Figure 7 shows the percentage of students reporting participation in specific assessment practices.

FIGURE 7 Level of participation in assessment-related activities (*n* = 51).



DISCUSSION

ECHS and SLC share many of the same features. As such, the results presented here can have implications for those implementing SLC in more traditional settings.

Our analysis of course-taking patterns indicates that the two ECHS for which we have early results were successful at increasing the number of students progressing through a college preparatory course of study. These results show that schools can open the advanced course-taking pipeline to more students than is traditionally done. These findings are consistent with one

of the strategies recommended by the U.S. Department of Education for SLC: enrolling students in a "coherent sequence of rigorous English language arts, mathematics, and science courses" (U.S. Department of Education, 2009). Schools seeking to implement SLC should thus give serious consideration to enrolling more students in a college preparatory track of study.

The results also suggest that expanding access for students is necessary but not sufficient if the goal is to increase the number of students graduating from high school and prepared for college. Increasing the number of students taking these courses does open the possibility that there may also be an increase in the number of students who are failing the course. For some students to succeed in college preparatory courses, they will need additional help and support. This confirms the importance of SLC incorporating other strategies prioritized by the U.S. Department of Education, including additional tutoring and academic support as well as catch-up courses for students who enter high school behind. Thus, expanding access to more rigorous courses and providing sufficient support can be seen as complementary endeavors that must occur simultaneously.

The results from the implementation data indicate that Middleton ECHS was executing the model's intended components. The school had created a college-going culture that gave students access to college preparatory courses as well as specific training in what they needed to do to be ready for college. Students reported engaging in practices associated with relevant and rigorous instruction as well as with quality assessment. Students also engaged in academic and social support activities that have contributed to creating an environment with positive teacher-student relationships. Teachers reported frequent involvement in decision making and frequent participation in professional development and collaboration with each other. The school had also developed a schedule to support these activities. These strategies and structures are consistent with the SLC model and suggest that it is possible to set up environments that include all of these components.

One caveat to the generalizability of the implementation findings is that Middleton is an entirely new school. As such, there was no existing school culture within which the staff had to work. An examination of schools supported by the Bill & Melinda Gates Foundation found that small schools formed from scratch did better than small schools formed as a result of breaking up an existing comprehensive school; the measures on which schools formed from scratch performed better included aspects of school culture such as improved relationships and student outcomes such as attendance, test scores, and student behavior (American Institutes of Research & SRI International, 2004, 2008). This suggests that SLC trying to change the existing culture of a school may face substantial challenges.

IMPLICATIONS

The results reported in this article are very promising, even if they come from only a small subset of schools. As we begin getting results from the full complement of schools, we will know if the patterns described in this article hold true across more schools in more settings.
If these results do hold across schools, then it is very clear that many traditional high schools are holding expectations that are too low for many of their students. This study's findings suggest that there are many students who could succeed in a more accelerated course of study and should

be given the chance to do so. This study's results also suggest that expansion of access must be accompanied for some students by sufficient support to enable these students to succeed.

One implication of this study is that smallness is not enough; simply breaking a school into smaller units is not going to have the desired results. The ECHS model appears to be working at least partly because it has moved far beyond structural changes. The ECHS are small, but they also have purposeful structures that engage teachers in collaboration, that provide academic support to students who need it, and that make it easier to personalize instruction. In addition, they have increased the course expectations for their students while also working to incorporate rigorous and relevant instructional practices. This suggests that, to allow all this to happen, designers of smaller learning communities and of small schools should simultaneously consider multiple components, such as the curriculum, instruction, academic and affective support for students, teacher collaboration and support, and establishing logistical supports.

The ECHS model, although unique in some aspects, is providing key information with implications for a broader range of schools. These small schools are serving as laboratories that are testing out ways of serving a wider range of students more effectively. If we in education are serious about trying to ensure that every child graduates from high school adequately prepared for further education or the world of work, then we would do well to pay attention to the lessons coming out of these new school models.

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Notes

All names are pseudonyms.

A fourth course of study, the Occupational Course of Study, is offered to students with disabilities who are unable to complete the regular course requirements. These three courses of study were collapsed into one—the Future Ready Core – for students who were entering ninth grade in the 2009–10 school year.

Starting with freshmen entering in the 2009–10 school year, students will be required to take Algebra I, Geometry, Algebra II, and one additional course beyond Algebra II to graduate, unless they actively opt out of this mandated sequence. Chemistry and Physics will not be required.

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